

II. REMARKS

A. Introductory Remarks

Reconsideration and allowance of this application is earnestly requested. Claims 77-106 and 108-139 are currently pending in this application. By this Response, claims 94 and 112 have been amended. In addition, and concurrently herewith, Applicants have submitted the Declaration of Robert J. Small and Zhefei J. Chen Under 37 C.F.R. §1.131, which is discussed below in connection Applicants' response to the rejections in the Office Action dated December 28, 2006.

B. Rejection of Claims 77-93, 112-120, 125-130 and 132-136 Under 35 U.S.C. §103(a)

Claims 77-106 and 108-139 have been rejected as obvious over Moeggenborg (100) in view of Fang (227) and Dirksen, alone or further in view of Moeggenborg (116). Applicants traverse this rejection in light of the declaration under 37 C.F.R. §1.131 submitted concurrently herewith.

As noted, Applicants have submitted a declaration under 37 C.F.R. §1.131 to antedate Moeggenborg (100), thereby removing it as a prior art reference against the pending claims. This declaration, along with the document attached thereto as Exhibit A, establish that the inventors had possession of and reduced to practice the claimed invention prior to September 24, 2001, which is the filing date of Moeggenborg (100). Following is a discussion of the law regarding declarations under 37 C.F.R. §1.131, particularly with respect to how much of the claimed invention must be shown by the evidence supporting the declaration, and a discussion of the concurrently submitted declaration itself as it applies to each of the pending independent claims (77, 94, and 112).

Case Law Regarding Declarations Under 37 C.F.R. §1.131

With respect to how much of a claimed invention must be shown in a Rule 1.131 declaration, the affidavit or declaration must establish possession of either the whole invention claimed or something falling within the claims in the sense that the claim as a whole reads on it.

In re Tanczyn, 52 C.C.P.A. 1630, 1634, 347 F.2d 830, 833 (1965), (stating that the court did not agree, and would not sanction a broad rule, that a declaration must show the entire claimed invention in all cases except genus-species situations); *see also* MPEP 715.02. In the case of a genus-species situation, an applicant only need show possession of a species within a claimed genus prior to the date of a reference disclosing that species to antedate such reference. *In re Stempel*, 44 C.C.P.A. 820, 826, 241 F.2d 755, 759 (1957).

In an application claiming a process with a range of weight percentages as a claim limitation, a declaration establishing possession of the process, but not the claimed range of weight percentages, was sufficient to antedate a reference. *In re Stryker*, 58 C.C.P.A. 797, 799, 435 F.2d 1340, 1341-42 (1971). In the *Stryker* case, Appellant claimed, in part, an improved process for removing propylene diluent from a suspension consisting essentially of from about 50%-60% by weight polypropylene solids in liquid propylene. *Id.* The Examiner rejected this claim as obvious over a reference that disclosed 35% polypropylene solids. *Id.* at 1341. Appellant had submitted an affidavit to antedate the reference, but, on appeal, the Board considered the affidavit deficient in that, while it alleged conception and reduction to practice of the claimed process (including the weight percentage limitation), there was no corroborating evidence showing those weight percentage limitations. *Id.* On appeal to the Court of Customs and Patent Appeals, the Court reversed the Board and held that:

To hold that Harban [the reference] is not removed by the showing presented would lead to an anomalous result, i.e., if appellant broadened his claims by deleting the weight limitations, so as to read literally on Harban, Harban would not be available as a reference against such broadened claims because appellant's antedating affidavit would be satisfactory in every response. It cannot be the law that the same affidavit is insufficient to remove the same reference applied against the slightly narrower claims presented here.

Id. at 1341-42.

As shown by the above cases, a declaration under 37 C.F.R. §1.131 need not show possession of the whole invention prior to the reference date but, rather, only needs to show possession of something falling within the claims, such as a species within a claimed genus. *See In re Stempel*, 44 C.C.P.A. at 826; *In re Tanczyn*, 52 C.C.P.A. at 1634. However, it is clear that

the genus-species situation is not to be viewed as the only situation in which a Rule 1.131 declaration that establishes possession of only a portion of the claimed invention is sufficient to antedate a reference. *In re Tanczyn*, 52 C.C.P.A. at 1634. Further, in the context of a claimed range, the *Stryker* case based its ruling on avoiding the anomaly of antedating a reference based upon broader claims. *In re Stryker*, 58 C.C.P.A. at 1341-42.

Applicants' Declaration Under 37 C.F.R. §1.131 to Antedate Moeggenborg (100)

As noted, independent claims 77, 94, and 112 are rejected as obvious over the primary reference of Moeggenborg (100). The Office Action states that Moeggenborg (100) teaches a polishing composition for polishing a noble metal, said composition comprising an abrasive (alumina) and periodic acid. Office Action, p. 2. Further, the Office Action asserts that Moeggenborg (100) teaches amounts for the periodic acid and that said amounts will encompass the claimed amounts. *Id.* at 3.

In response, Applicants request consideration of the concurrently submitted declaration under 37 C.F.R. §1.131. This declaration includes Exhibit A that evidences the reduction to practice of the invention as claimed in independent claims 77, 94, and 112 prior to September 24, 2001, the reference date of Moeggenborg (100). Declaration of Robert J. Small and Zhefei J. Chen Under 37 C.F.R. §1.131, paras. 6-10. This declaration has been signed by all of the named inventors, Robert J. Small and Zheifei Chen, and states that the acts relied upon to establish completion of the invention prior to the date of this reference were carried out in the United States, *Id.* at 2. Accordingly, Applicants submit that by this declaration and Exhibit A, Moeggenborg (100) has been effectively antedated, thereby making it unavailable as prior art.

Exhibit A describes several chemical-mechanical polishing compositions that were made and tested prior to September 24, 2001. Accordingly, these compositions and tests illustrate possession and reduction to practice of the invention as recited in independent claims 77, 94, and 112. *Id.* at 7-10. Specifically, regarding independent claim 77, Exhibit A describes Compositions A and Q as polishing slurries for polishing iridium and platinum, both noble metals, wherein the polishing slurries comprise 0.1 moles/kg of periodic acid and 2% by weight of alumina abrasive and produce polishing rates of 288 to 1598 angstroms per minute. *Id.* at 8. Accordingly, these compositions and tests evidence the reduction to practice of each element of claim 77 (*e.g.*, a substrate comprising a noble metal contacting a chemical mechanical polishing

composition comprising periodic acid at a concentration of about 0.05 to about 0.3 moles/kg and an abrasive to maintain a polishing rate of between 300 and about 2000 angstroms per minute) prior to the reference date of Moeggenborg (100).

Regarding independent claim 94, Exhibit A describes Compositions F, G, H, I, J, and K as polishing compositions to polish a substrate comprising an iridium, a noble metal, having thereon a TEOS (tetraethyl orthosilicate), a dielectric. *Id.* at 9. These compositions comprise approximately 2-2.5 weight percent alumina abrasive and approximately 0.1 mole/kg periodic acid and had a pH of about 6.7 to 7.3. *Id.* Further, these Compositions gave a TEOS selectivity ratio of from 1:1.3 to 3.9:1. Accordingly, these compositions and tests evidence the possession and reduction to practice of each element of claim 94 (*e.g.*, a substrate comprising a dielectric and a noble metal contacting a composition comprising periodic acid in an amount from about 0.05 to about 0.3 moles/kg, an abrasive in an amount from about 0.2 to about 6 weight percent, and a pH from above pH 5 to about pH 10, wherein the selectivity of the polishing the noble metal-containing metal to the dielectric material is at least 1:1) prior to the reference date of Moeggenborg (100).

Regarding independent claim 112, Exhibit A describes Compositions F, G, H, I, J, and K (discussed above), as well as Compositions E, B, D, and N, as compositions for polishing a substrate comprising a noble metal, wherein the compositions comprised approximately 2-2.5 weight percent alumina abrasive and approximately 0.1 mole/kg periodic acid. *Id.* at 10. The pH of each of these compositions was adjusted using ammonium hydroxide as a pH-adjusting agent to values ranging from 1.6 to 3-4 to 6.7-7.3. *Id.* Further, each of these compositions utilized various compounds as suspension agents. *Id.* Accordingly, these compositions and tests evidence the possession and reduction to practice of each element of claim 112 (*e.g.*, a substrate comprising a noble metal contacting a composition comprising water, periodic acid in an amount from about 0.05 to about 0.3 moles/kg, an alumina abrasive in an amount from about 0.2 to about 6 weight percent, a pH-adjusting agent to cause the pH to be between about 1 to about 4 or about 5 to about 10, and a suspension agent) prior to the reference date of Moeggenborg (100).

Applicants submit that the foregoing clearly evidences possession of the inventions as claimed in independent claims 77, 94, and 112 prior to the reference date of Moeggenborg (100), thereby antedating Moeggenborg (100) as a prior art reference. However, Applicants are aware

that prior Office Actions have concluded that previous declarations submitted under 37 C.F.R. §1.131 were deemed to be insufficient. For example, certain claims were previously rejected as obvious over Moeggenborg (100) in the Office Action dated April 29, 2003. In response, Applicants submitted an affidavit to antedate the Moeggenborg reference (including other references) with supporting evidence of notebook pages showing the examples of polishing composition comprising 0.1 moles/kg of periodic acid. In the subsequent final Office Action dated December 18, 2003 the Office Action stated that the declaration was insufficient to establish prior invention because the declaration only established prior invention for one point for the periodic acid, this being 0.1 moles/kg of periodic acid. Further, the Examiner stated that the declaration did not show reduction to practice of the entire ranges being claimed.

Applicants submit that based upon the above cited case law the current declaration under 37 C.F.R. §1.131 and corresponding Exhibit A are sufficient to establish possession and reduction to practice of the inventions as claimed in independent claims 77, 94, and 112. However, in light of the issues raised regarding the previous Rule 1.131 declarations, Applicants will address the specific issue as to why the reduction to practice of various compositions using 0.1 moles/kg of periodic acid is sufficient under 37 C.F.R. §1.131 to antedate the Moeggenborg (100) reference.

As discussed above, the Court of Customs and Patent Appeals has held that the Rule 1.131 affidavit or declaration must establish possession of either the whole invention claimed *or something falling within the claims* in the sense that the claim as a whole reads on it. *In re Tanczyn*, 52 C.C.P.A. at 1634 (emphasis added). In the present Rule 1.131 declaration and in light of Exhibit A thereto, Applicants have at the very least shown possession and reduction to practice of the invention as recited in independent claims 77, 94, and 112, based upon, among other things, the use of 0.1 moles/kg of periodic acid, as this concentration of periodic acid clearly falls within the claimed range of from about 0.05 to about 0.3 moles/kg. Therefore, Applicants have established reduction to practice of something that falls within the claims in the sense that the claim as a whole reads upon it. Such should be sufficient to antedate Moeggenborg (100).

Moreover, the genus-species situation is one in which something that falls within the claims (or something less than the whole invention as claimed, albeit something that is still within the scope of the claims) can be described in a Rule 1.131 declaration to sufficiently

antedate a reference. *In re Stempel*, 44 C.C.P.A. at 826. However, the Court of Customs and Patent Appeals has refused to accept a rule that would limit such situations to only genus-species. *In re Tanczyn*, 52 C.C.P.A. at 1634. Here, Applicants' disclosure of an embodiment of the invention using 0.1 moles/kg of periodic acid, which is within the claimed range of from about 0.05 to about 0.3 moles/kg, is clearly analogous to reduction to practice of a species within a genus, wherein the 0.1 moles/kg may be construed as a species within the claimed range, which may be construed as the genus. Since the Court of Customs and Patent Appeals has clearly indicated that genus-species relationships are not the only situations in which something less than the whole invention can be shown in a Rule 1.131 declaration to antedate a reference, the description of a one concentration within a claimed concentration range in a Rule 1.131 declaration is clearly another situation that is sufficient to antedate a given reference, particularly given the close analogy to the genus-species situation.

Further still, in the *Stryker* case, a declaration establishing possession of the invention but not the specifically claimed range was sufficient to antedate a reference. *In re Stryker*, 58 C.C.P.A. at 1340. Specifically, the applicant in that case had no corroborating evidence to support the claimed weight percent range of a particular component, which the Examiner deemed obvious over the prior art. *Id.* at 1341. Yet, the Rule 1.131 declaration was deemed to be sufficient based upon what would otherwise be an anomalous result: the reference could be removed if the claims were broader and it cannot be that the same Rule 1.131 declaration would be insufficient to remove the same reference applied against more narrow claims. *Id.* at 1342.

In the current application, Applicants claim a noble metal polishing slurry composition comprising, among other things, periodic acid in the range from about 0.05 to about 0.3 moles/kg. The Rule 1.131 declaration establishes at the very least the reduction to practice of all of the claim elements at a periodic acid concentration of 0.1 moles/kg. The situation is almost identical to that of *Stryker*, except for the fact that Applicants here actually have evidence to show reduction to practice of an embodiment within the claimed range, whereas in *Stryker* there was no corroborating evidence for the claimed weight percent range at all.

Further, the Office Action states that the claimed concentration range of periodic acid is obvious in light of the prior art. Office Action, p. 3. Therefore, the same anomalous result could occur that was warned against in the *Stryker* case. That is, the reference would be eliminated if the

claims were broadened by deleting the periodic acid concentration limitation since the declaration would then be sufficient in all respects.¹

Based upon the foregoing, Applicants submit that the Rule 1.131 declaration and Exhibit A filed herewith sufficiently evidences the reduction to practice of independent claims 77, 94, and 112 prior to the reference date of Moeggenborg (100). Therefore, Applicants believe they have properly antedated this reference such that it cannot be used as prior art against the pending claims. Accordingly, Applicants request withdrawal of this rejection.

C. Rejection of Claims 112-120, 126, 127, 129, 130 and 132-134 Under 35 U.S.C. §103(a)

Claims 112-120, 126, 127, 129, 130 and 132-134 have been rejected as obvious over Moeggenborg (100) in view of Fang (227) and Dirksen, alone or further in view of Moeggenborg (116). Applicants traverse this rejection.

First, as discussed above, Applicants' declaration under 37 C.F.R. §1.131 sufficiently antedates Moeggenborg (100), thereby removing it as a prior art reference. On this basis alone, withdrawal of this rejection is requested.

Second, in rejecting claim 112, the Office Action stated that although "consisting essentially of" is used and Moeggenborg (100) uses and Moeggeborg (100) uses additional components no distinction is seen to exist because it is the examiner's position that these components will not materially affect the basic and novel properties of the composition and thus are still within the scope of the claims. Further, the Office Action asserted that burden is upon the applicants to show that this additional component will materially affect the basic and novel properties of the claimed composition. Office Action, pp. 4-5.

Applicants contend that additional components taught by Moeggenborg (100), namely the addition of a rare earth salt (lanthanide or actinide metal ion) such as cerium and praseodymium in combination with a per-type oxidizer that synergistically act to enhance the polishing rate of the noble metal substrate, would materially affect the basic and novel properties

¹ Although the Examiner may be able to reject such broader claims based on other prior art, such is not a basis for rejecting a declaration under 37 C.F.R. §1.131 that properly antedates a reference. In the *Stryker* case, the court recognized that had broader claims been presented, earlier prior art may have been found to reject such claims. *In re Stryker*, 58 C.C.P.A. at 1342. However, the court did not indicate or imply in any manner that the availability of such earlier prior art would somehow negate consideration or use of a 1.131 affidavit directed to a portion of the invention to antedate a given reference.

of the composition of invention as recited in claim 112. Moeggenborg states “The removal rate was more than ten times and in some instances 30 times greater in the presence of both the rare earth salt and the oxidizer than in the presence of only the rare earth salt or the oxidizer. In addition, the removal rate remained relatively high (and substantially higher than the controls) even with significantly lower levels of rare earth salt.” Moeggenborg, col. 6, ll. 14-21. Accordingly, in view of Moeggenborg’s disclosure of rare earth salt, one of ordinary skill in the art would expect a material change in the basic and novel properties of the composition of claim 112 because it would likely lead to a substantial change in the polishing rates. Therefore, withdrawal of this rejection as to claims 112-120, 126, 127, 129, 130, and 132-134 is requested.

D. Rejection of Claims 94-206, 108-109 and 111 Under 35 U.S.C. §103(a)

Claims 94-206, 108-109 and 111 have been rejected as obvious over Moeggenborg (100) in view of Fang (227) and Dirksen, alone or further in view of Moeggenborg (116). Applicants traverse this rejection.

First, as discussed above, Applicants’ declaration under 37 C.F.R. §1.131 sufficiently antedates Moeggenborg (100), thereby removing it as a prior art reference. On this basis alone, withdrawal of this rejection is requested.

Second, in rejecting claims 94, the Office Action stated that with respect to the specific substrate (one comprising a noble metal layer and a dielectric layer), Moeggenborg *et al.* (100) states that the substrate can be any suitable substrate (col. 4, lines 50-51) and contain a noble metal. Office Action, p. 8. The Office Action further asserts that the polishing of a substrate comprising a noble metal layer and dielectric layer would have been obvious to the skilled artisan because this type of substrate is known to be polished with an abrasive/oxidizer polishing slurry as shown by Klein *et al.* *Id.* The motivation for this combination is defined by Moeggenborg *et al.* (100) in the statement that any suitable substrate can be polished. *Id.* Further, with respect to the selectivity, the Office Action asserts that since the composition is the same and is used to polish the same substrate, these characteristics are expected and therefore obvious because the same polishing composition is expected to provide the same polishing characteristics to a substrate upon polishing. *See*, Office Action, p. 8.

Applicants submit that even if Moeggenborg and Klein are combined, the combination fails to teach or suggest the selectivity ratio of at least 1:1 between the noble metal and dielectric polishing rates as recited in claim 94. The examples of Klein do not show polishing rates of noble metal and dielectric. Thus, Klein fails to address the selectivity ratio in general and more particularly a ratio of at least 1:1 between noble metal and dielectric polishing rates. Further, given the fact that Moeggenborg teaches using a rare earth metal salt such as cerium in his polishing slurry, it is not known how this rare earth salt would affect the polishing rate of the dielectric in comparison to the noble metal substrate, which is on the same substrate. Thus, there is no basis to expect the same results as recited in claim 94 because of the substantial differences in the polishing compositions of Moeggeborg and Klein as compared with the composition of claim 94. Accordingly, withdrawal of this rejection as to claims 94-206, 108-109, and 111 is requested.

III. Request for Allowance

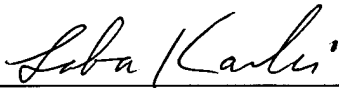
In view of the foregoing, all claims are now thought to be in condition for allowance, an indication of which is solicited. In the event that any issues remain outstanding, Applicants would appreciate the courtesy of a telephone call to the undersigned counsel to resolve such issues in an expeditious manner so as to place this application in condition for allowance.

A three-month extension fee is co-filed herewith. If any additional fees are determined to be due, the Commissioner is hereby authorized to charge these fees to the Morgan, Lewis & Bockius Deposit Account no. 50-0310.

Respectfully submitted,

MORGAN LEWIS & BOCKIUS LLP

Date: Thursday, June 28, 2007

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